

Appl. No. 09/936,362  
Reply to Office Action of March 26, 2003

Amendments to the Claims:

Without prejudice or disclaimer, please amend the claims as shown in the below Listing of Claims. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-15 (Cancelled)

Claim 16 (Amended): An immunogenic composition, comprising at least one immunologically active component selected from the group consisting of:

- (A) ~~an isolated and purified nucleic acid molecule encoding a *Haemophilus influenzae* adhesin (Hia) protein of a strain of *Haemophilus influenzae* having:~~
  - ~~(a) a DNA sequence selected from the group consisting of those shown in Figures 18, 20, 21, 22, 23, 24 and 25 (SEQ ID Nos: 23, 27, 29, 31, 33, 35, 37); or~~
  - ~~(b) a DNA sequence encoding a *Haemophilus influenzae* adhesin (Hia) protein having an amino acid sequence selected from the group consisting of those shown in Figures 18, 20, 21, 22, 23, 24 and 25 (SEQ ID Nos: 24, 28, 30, 32, 34, 36, 38);~~
- (B) ~~an isolated and purified nucleic acid molecule encoding an N-truncated *Haemophilus influenzae* adhesin (Hia) protein of a strain of *Haemophilus influenzae* which is amplifiable by a pair of nucleotides which are selected from the group consisting of:~~
  - ~~SEQ ID No: 7 and SEQ ID No: 15~~
  - ~~SEQ ID No: 9 and SEQ ID No: 15~~
  - ~~SEQ ID No: 11 and SEQ ID No: 15~~
  - ~~SEQ ID No: 13 and SEQ ID No: 15~~
  - ~~SEQ ID No: 55 and SEQ ID No: 57;~~
- (C) ~~an isolated and purified nucleic acid molecule encoding a truncated *Haemophilus influenzae* adhesin (Hia) protein of a strain of *Haemophilus influenzae* expressible as inclusion bodies; said N-truncated protein having the ability to bind to human epithelial cells; and~~

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(D) a recombinant protective *Haemophilus influenzae* adhesin (Hia) protein of a non-typeable strain 33 of *Haemophilus influenzae* producible by a strain of *E. coli* transformed by an expression vector as claimed in claim 5, 6 or 9 comprising an isolated and purified nucleic acid molecule selected from the group consisting of:

- (a) an isolated and purified nucleic acid molecule encoding a *Haemophilus influenzae* adhesion (Hia) protein of non-typeable strain 33 of *Haemophilus influenzae*, said molecule having the DNA sequence shown in Figure 18 (SEQ ID No: 23).
- (b) an isolated and purified nucleic acid molecule encoding a *Haemophilus influenzae* adhesion (Hia) protein of non-typeable strain 33 of *Haemophilus influenzae*, said protein having the amino acid sequence shown in Figure 18 (SEQ ID No: 24).
- (c) an isolated and purified nucleic acid molecule encoding an N-truncated *Haemophilus influenzae* adhesin (Hia) protein of non-typeable strain 33 of *Haemophilus influenzae* which is amplifiable by the pair of nucleotides, SEQ ID No: 60 and SEQ ID No: 18.
- (d) an isolated and purified nucleic acid molecule encoding an N-truncated *Haemophilus influenzae* adhesin (Hia) protein of non-typeable strain 33 of *Haemophilus influenzae* expressible as inclusion bodies, said N-truncated protein having the ability to bind to human epithelial cells, and
- (e) an isolated and purified nucleic acid molecule encoding the V38 N-truncated *Haemophilus influenzae* adhesin (Hia) protein of non-typeable strain 33 of *Haemophilus influenzae*.

wherein, said vector further comprises a promoter for expression of said full-length or N-truncated Hia protein; and  
a pharmaceutically-acceptable carrier therefor.

Claim 17 (Original): The immunogenic composition of claim 16 formulated as a vaccine for *in vivo* administration to protect against disease caused by *Haemophilus*.

Claim 18 (Original): The immunogenic composition of claim 16 in combination with a targeting molecule for delivery to specific cells of the immune system or to mucosal surfaces.

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Claim 19 (Original): The immunogenic composition of claim 16 formulated as a microparticle, capsule or liposome preparation.

Claims 20 (Original): The immunogenic composition of claim 16 further comprising an adjuvant.

Claim 21 (Original): A method for inducing protection against disease caused by *Haemophilus*, comprising administering to a susceptible host an effective amount of the immunogenic composition of claim 16.

Claim 22 (Original): The method of claim 21 wherein the susceptible host is a human.

Claims 23-29 (Cancelled)